

REMARKS

The present Amendment is in response to the Office Action dated July 1, 2005 in reference to the above-identified application. The Examiner set a shortened statutory period for reply of three (3) months, making the present Amendment due by October 1, 2005. Filed concurrently herewith is a request for a three-month extension of time so that the present Amendment is due by January 1, 2006 (a Sunday, with January 2, 2006 observed for the New Year) so that this amendment is due January 3, 2006.

In that Office Action, claims 1-44 were pending of these, Applicants note with appreciation to the Examiner's indication that claims 4, 5, 12, 21, 25 and 26 contain allowable subject matter. The remaining claims, claims 17, 18, 32 and 33 rejected under 35 U.S.C. §112, second paragraph. Here, the Examiner indicated that he could not determine what was meant by "longitudinally of and above said tank".

More substantively, claims 1, 2, 6-9, 13, 14 and 22 were rejected over U.S. Patent No. 5, 263,361 to Gates in view of U.S. Patent No. 3,592,047 to Carleton and U.S. Patent No. 3,550,432 to Gundal et al. under 35 U.S.C. §103(a). Claim 3 was rejected as obvious over Gates in view of Carleton and Gundal et al. and in further view of U.S. Patent No. 5,369,983 to Grenfell under 35 U.S.C. §103(a). Claims 10 and 11 were rejected as obvious over Gates in view of Carleton and Gundal et al. in further view of U.S. Patent No. 3,270,552 to Davis under 35 U.S.C. §103(a). Claim 15 was rejected as obvious over Gates in view of Carleton and Gundal et al. and in further view of U.S. Patent No. 6,629,449 to Kline-Schoder et al. under 35 U.S.C. §103(a). Claims 16 and 17 were rejected as obvious over Gates in view of Carleton

and Gundal et al. and in further view of U.S. Patent No. 5,448,919 to Fawcett, Jr. et al. under 35 U.S.C. §103(a). Claim 19 was rejected as obvious over Gates in view of Carleton and Gundal et al. in further view of U.S. Patent No. 3,950,982 to Bade et al. under 35 U.S.C. §103(a).

Continuing, claims 20, 23, 27, 28 and 31 were rejected as obvious over Gates in view of Carleton and Gundal et al. in further view of U.S. Patent No. 5,010,761 to Cohen et al. under 35 U.S.C. §103(a). Claims 29 and 30 were rejected as obvious over Gates in view of Carleton, Gundal et al. and Cohen et al. in further view of Davis under 35 U.S.C. §103(a). Claim 32 was rejected as obvious over Gates in view of Carleton, Gundal et al., Cohen et al. in further view of Fawcett, Jr. et al. under 35 U.S.C. §103(a). Claim 34 was rejected as obvious over Gates in view of Carleton, Gundal et al., Cohen et al., in further view of Bade et al. under 35 U.S.C. §103(a).

Method claims 35, 36 and 44 were rejected as obvious over Gates in view of Carleton under 35 U.S.C. §103(a). Claims 37 and 38 were rejected as obvious under 35 U.S.C. §103(a) over Gates in view of Carleton and Gundal et al. Claims 39 and 40 were rejected as obvious under 35 U.S.C. §103(a) over Gates in view of Carleton and Gundal et al. in further view of Davis. Claim 41 was rejected as obvious over Gates in view of Carleton and in further view of Cohen et al. under 35 U.S.C. §103(a). Claim 42 was rejected as obvious over Gates in view of Carleton and in further view of Kline-Schoder et al. under 35 U.S.C. §103(a). Finally, claim 43 was rejected as obvious over Gates in view of Carleton and Gundal et al. in further view of Bade et al. under 35 U.S.C. §103(a).

At the outset, Applicants have amended claims 17 and 32 by replacing the preposition “of” with the preposition –along-. While Applicants do not believe that there is anything indefinite with these claims, as originally written, it is also thought that this minor technical correction may improve the understanding of the Examiner as to the recitations of these claims. These amendments are made for this technical reason, only, and not for reasons based on any prior art applied by the Examiner in these rejections. The amendment to claims 17 and 32, the rejections of claims 18 and 33 dependent therefrom should likewise be removed.

Next, Applicant has added new claims 45, 46 and 47 which, respectively rewrite former dependent claims 4, 12 and 21 in independent form including the necessary recitations from each of their preceding claims. Accordingly, claims 4, 12 and 21 have been canceled. Applicants note that, with respect to new claim 45, Applicant has recited that the background is “substantially black”. The word “substantially” did not appear in former dependent claim 4.

With respect to independent apparatus claims 1 and 23, Applicant has chosen not to amend such claims substantively amend the dependent claims dependent therefrom. While Applicants appreciate the depth of detail provided by the Examiner in his Office Action, the Applicants respectfully disagree that the prior art references applied by the Examiner in reaching his conclusions fully and fairly disclose the recitations and limitations currently present in the claims as written. Moreover, Applicants disagree that any combinations of references relied upon by the Examiner in reaching his rejections are disclosed or reasonably suggested for combination in such references.

Specifically, these independent claims recite that there is an observation region through which articles to be tested are conveyed underneath the surface of a liquid. Detection is accomplished an optical detector. This optical detector has a “view field that has a horizontal width and a vertical view height and that has a transverse view depth of field along the view line”. Moreover, the optical detector operates to generate a leak signal when bubbles of selected bubble size are detected.

None of the applied references include or suggest this optical detector structure. Applicants agree that Gates ‘361 teaches a leak detecting apparatus having a conveyor to convey articles through a tank of fluid beneath the surface thereof. In addition, Applicants agree that the patent to Gundal et al. teaches a conveyor having entrance and output sections above the upper surface of a liquid and an intermediate section that is submerged. However, Applicants disagree with the Examiner’s conclusions that a laser and a photo sensor can be considered an optical detector as recited in either claims 1 or 23 and, with specific reference to Figure 1, an optical detector that has a view field with a horizontal view width and a vertical view height. As explained in specification, one such example of an optical detector is an image processor. However, a laser and photo detector does not provide for such a view field.

While the output beam of a laser does have a cross section that could be viewed as having a width and height, a laser would not have a view depth of field along a view line. Depth of field is an optical property of a lensing system wherein objects within the three dimensional volume are in focus. This property is not associated with a laser and photo diode. Moreover, it is not

seen how, realistically, a laser and photo diode assembly would actually be able to monitor bubbles in a submersion tank in a manner that would, for example, ignore bubbles that are below a threshold value in size and only register the presence of bubbles above that thresholds size. That is, a small bubble located either close to the laser or close to the photo diode could register the same as a large bubble located medially therebetween.

Moreover, as to dependent claims 14 and 15, which are specifically directed to an optical imager, there is no suggestion or motivation to include the CCD device described in the patent to Kline-Schoder. Rather, as is taught by Kline-Schoder et al., the CCD video camera is used in conjunction with bubbles that are constrained to flow into a sight tube (see Figure 6) so that the bubbles are very tightly confined for observation. To combine the system with Gates would require some structure wherein any bubbles in the submersion tank would have to be collected and channeled through some type of capillary tube for observation. Thus, Kline-Schoder et al. does not suggest the use of video camera or optical imager could be used with respect to the apparatus of Gates.

As to the Examiner's comments regarding the measurement of bubble size being taught by Carleton, Applicants strongly disagree with the Examiner's position. The present apparatus is directed to automated machinery as clearly set forth including an optical detector that automatically measures bubble size. The disclosure of Carleton teaches only having a human observer who subjectively watches bubbles to determine whether to pass or reject a test article that has been manually submerged in a jar.

Turning to the method claim 35, any of the arguments set forth above applies well. Specifically, none of the prior art applied by the Examiner, whether taken alone or in combination, fully and fairly disclose the monitoring of an observation region when imaging processor to detect bubbles of a threshold size. Likewise, these references do not teach the generation of a control signal in response to the presence of a bubble having a size equal to or greater than the threshold size. Here, the Examiner has barely combined Gates and Carleton to reject this claim. However, as set forth above, Carleton discloses a human observer and not an imaging processor. Moreover, it would not be obvious to combine Gates and Kline-Schoder et al. since, as noted above, such would require the steps of collecting bubbles and passing them through a capillary-type tube. Moreover, significant processing steps recited in the dependent method claims are not present in the applied references.

Due to this Amendment, a new filing fee calculation is provided, as follows:

Maximum Total Claims This Amendment		Total Claims Previously Paid For	
44	-	44	= 0 x \$25.00 = \$
Total Independent Claims Per This Amendment		Maximum Independent Claims Previously Paid For	
6	-	3	= 3 x \$100.00 = \$300.00
Additional Filing Fee Due			\$300.00

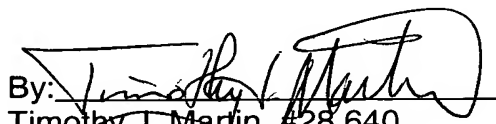
Accordingly, our check no. 5388 in the amount of \$300.00 is enclosed. The Commissioner is hereby authorized to charge any deficiency in the payment

of the required fee(s) or credit any overpayment to Deposit Account No. 13-1940.

Based on the foregoing, Applicants submit that the present application is in complete condition for allowance, and action to that end is courteously solicited. If any issues remain to be resolved prior to the granting of this application, the Examiner is requested to contact the undersigned attorney for the Applicant at the telephone number listed below.


Respectfully submitted,

MARTIN & HENSON, P.C.

By: 
Timothy J. Martin, #28,640
Michael R. Henson, #39,222
John W. Carpenter, #57,830
9250 West 5th Avenue, Suite 200
Lakewood, Colorado 80226
(303) 232-3388

CERTIFICATE OF MAILING UNDER 37 C.F.R. 1.8

I hereby certify that the foregoing **AMENDMENT (20 pages), CHECK NO. 5388 IN THE AMOUNT OF \$300.000** is being deposited with the United States Postal Service as first-class mail in an envelope addressed to Mail Stop Fee Amendment, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on this 3rd day of January, 2006.


Christy L. Burbank